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John Jones

AN ESSAY

ON THE

NON-EXISTENCE OF MALARIA;

ESPECIALLY AS A CAUSE OF

**INTERMITTENT AND REMITTENT BILIOUS
FEVERS.**

READ BEFORE THE

Central Medical Society of Georgia,

DECEMBER 3, 1828.



BY ALEXANDER JONES, M. D.



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INTRODUCTION.

HAVING, during the last year, been led to the investigation of the following subject, a right understanding of which, I believed to be of very great importance. I was induced to draw up my observations and reflections, and read them before the *Central Medical Society* of this State. The doctrine advanced, being contrary to the *received opinions* on the subject, caused several of my friends to request their publication. With this intention, I forwarded a copy to the Editors of the *American Journal of the Medical Sciences*, requesting its publication in the February No. of that periodical. It was not long before I received a letter from Dr. Isaac Hays, one of the Editors, informing me, that it appeared to contain some facts incorrectly stated, and which, if omitted, might so weaken the doctrine maintained as to cause me to withhold its *insertion* in the *Journal*. He also stated, he would return it for revision, with marginal notes, as soon as an opportunity offered, hoping to have it returned in time for insertion in the May No. of the *Journal*. In his remarks, Dr. Hays professed no other motives than those of candour, and a wish to have the *paper*, he said, to be as creditable as possible. I received the communication, accompanied with a letter to me, on the 19th February, from Dr. Hays. I found the communication interspersed, not so much with *memoranda* and *references*, as with strong opposition to the doctrine

advanced in it. *Dr. Hays* stated in his letter, that his duties, as one of the Editors of that Journal, compelled him, "*unhesitatingly, to place himself in the position of a staunch miasmatisist*" Whether this was done from a conviction of the reality of the *miasmatic doctrine*, or from a wish merely to raise an ordeal through which my paper was to pass into the columns of the Journal, is left for himself and the public to decide. Relieving the *doctrine of miasma* is one taught and professed, not only by a majority of the Editors of the Journal, but likewise by the *teachers in the Medical School*, under whose patronage this periodical has been so usefully and so long conducted, it is not wonderful, that such strong scruples should be expressed against an *opposing theory*, and such difficulties (no doubt from pure motives on *Dr. Hays'* part) thrown in the way of its publication. I had not conceived, however, that the eminent conductors of the Journal had set themselves up, as *arbiters of medical doctrines*, and so far from their columns being closed to doctrines held in *opposition* to those taught by the *Philadelphia school*, that they were open to a *free discussion* of all disputed and unsettled theories in Medical Science. *Dr. Hays* stated that my communication, if revised and returned by the first of March, would be in time for the May No. of the Journal. Now, it never came back to my hands till the 19th February. In order for it to have reached Philadelphia by the 1st March, I should have had to have mailed it, here, on the morning of the 21st; thereby only allowing me two days to have replied to all the objections and arguments, that could be suggested against it by the most erudite

and industrious miasmatist. I likewise thought that, if I should have returned my paper to Dr. Hays with the necessary replies to his strictures, probably a fondness for the favorite theory would have caused him to have raised further objections, and rejoined answers to my replies, thereby creating a M. S. controversy. To prevent such a result, I determined to publish my paper in its present form, and submit it to the public. Whatever its *merits, or demerits* are, I am willing they should be ascribed to me. It has been impossible for me, in the limits of this (intended) short treatise, to include every thing, which could be said in favor of my doctrine, or to reply to all which could be said against it. Such prolixity, if necessary at present, would fill a large octavo volume. The subject, however, at a suitable period, will be renewed, and pursued in all its ramifications.

I have included Dr. Hays' strictures in an *Appendix*, and annexed the proper replies.

A. JONES.

FEBRUARY 25th, 1829.

AN ESSAY, &c.

THE doctrine of miasmatic exhalations, causing intermittent and bilious fevers, is one that has been believed for many years, by physicians, almost universally. Yet the *modus operandi* of these exhalations, in the production of fever, has never been explained on satisfactory principles, nor ever will be, for one grand reason, viz: that no such deleterious miasmatic exhalations, so destructive to health, exist, except in the imaginations of speculative theorists. Those who believe in the doctrine, in its extended sense, (and there are but few who do not,) have entirely failed to tell us what it is: What its properties are: What kind or combination of things, or aerial substances it consist of: (a.)* What circumstances are capable of producing it: Where or on what part of the human system it makes its first morbid impression. One will tell you that it is the product of stagnant water and mud—another, of marshy ground; all without any proof. Because they meet with *intermittent fevers* there, this invisible, incomprehensible something, must be the cause of them. Some tell us this “*spirit moving cause*” makes its first feverish grasp on the lungs, and is carried into the circulation: Others contend, it first moves upon the Schneiderian membrane, and there leaves its pestilential sting; and *other knowing ones, declare it is enveloped in the saliva, and carried into the stomach, and there, viper-like, fixes its poison*, which is conveyed from thence, by *sympathy, or otherwise*, to every part of the body, or system.

Now, all these *hypotheses* have, ever since I have paid any attention to the study of medicine, and reflected much on the subject, appeared to me to be

* See the Appendix.

absurd and untenable. I am disposed, from various causes, to *deny the existence, in toto*, of what is termed marsh, or pond miasma, or poison, and called, by the Italians, Malaria. As the latter is an appellation of very general use, I shall in future adopt it in my discussion. All the proof that is offered, or relied on, by the advocates of this doctrine, is the *similarity of diseases in similar situations of country, assuming Malaria* to be the uniform cause in all. It is an undeniable fact, that all investigations have failed to detect this *apprehended poison* in the atmosphere. The nicest experiments with Eudiometers, have never discovered in *Malaria districts of country*, any combination with, or alterations in, the exact component parts of the air (*b.*) No chemist or philosopher has ever been able to explain, define, or illustrate any of its inherent qualities, or properties. In short, it is a thing only known in name, an immaterial spirit; like the Heathen's God, a thing believed in, but not revealed—"a shadow without substance"—an "*Ignis Fatuus*," with *Jack with a lantern* name, believed in, but not explained, or known. It is something, or nothing. If it is *something*, something would be known about it. If it is *nothing*, it ought not to be called *something*.

My proposition is this, and it is one I hope to prove to every unprejudiced mind: *That moisture, under different states of temperature, acting upon the human frame under different states of the cutaneous functions and muscular relaxation, are the sole causes of Intermittent and Remittent Bilious Fevers.* This proposition, I wish the reader constantly to bear in mind throughout the discussion, because, without it, he will not be able to comprehend the doctrine proposed. It is a fact admitted by all, that *Malaria* never is brought into action, without the presence of *heat* and *moisture*. I have never heard of a country afflicted with *malaria fevers*, but what they were connected with, or traced to moisture of some kind. (*c.*) In fact, malaria cannot be con-

ceived of without the association of moisture with it. I believe, the moisture which is experienced in the cold climate of England, producing in that country, *Consumption, Rheumatism, Cynanche, Pleurisies*, and various other inflammatory disorders, would, if felt in a hot climate, produce *Dysenteries, Cholestras, Bilious Remittent, and Intermittent Fevers*, and many other diseases of the *internal organs*, particularly of the *Liver*. The different states of the human system, produced by the great difference in temperature in the two climates, would naturally give rise to different affections in the two countries; moisture being the prime agent in both. We know very well that the *skin* possesses *sympathies* with all the internal organs, especially with the *Liver*, the *Stomach*, the *Lungs*, &c. We know that cold braces the muscles, and renders them more rigid, by corrugating the skin, and lessening perspiration; (*d.*) it thereby, in a healthy state of the system, acts as a tonic, while heat relaxes the skin and muscles, and augments perspiration. When much moisture is superadded to the air, under these opposite states of temperature, we may readily conceive of its effects upon the human system. In a cold climate, where moisture adds to the coldness of the weather, checked perspiration is the consequence of a sudden exposure to its influence. Consequently, a determination of blood upon the internal organs takes place, especially upon the lungs, there exciting all the symptoms of pulmonary disease, unless the system reacts and *restores perspiration*, before disease becomes permanent. If the system were more relaxed by a tropical climate, a more general and powerful determination would take place upon all the internal organs; the *liver, spleen, stomach, kidneys, intestines, mesenteries*, would all be more gorged with *excited arterial blood*, whose excess, under tropical heat, had been discharged through the relaxed pores of the skin; but these being closed by the action of a cool, moist atmosphere, forbid the passage of perspirable

matter from the arterial mass of blood : it of course returns with redoubled force and energy upon the defenceless organs, and endeavors to escape by their internal secretions. But these organs are inadequate to discharge these heavy demands for relief. *Congestion, inflammation, and disordered functions*, throughout the machine, take place with increased heat, and all the phenomena of fever follow in a train. There are few diseases of any kind, or country, but what may, in most cases, be traced, directly, or indirectly, to suppressed perspiration, especially *in the commencement of indisposition*, whether occurring in summer or winter. We know very well that excessive moisture, combined with the air, has the natural effect of *rendering it cooler*, particularly at night, (*c.*) when a greater precipitation of dew takes place, in proportion, at least, to the evaporation from the surface of water in the neighborhood during the day. Such states of the atmosphere, naturally tend to check *perspiration*, the fruitful cause of so many diseases, and the interruption of the healthy action of a function which *sympathises* with every part of the *human organization*. We know that an important indication in the treatment of our fevers, and most other diseases, consists in the *restoration of healthy action to the skin*; and where this cannot be accomplished, it is an unfavorable symptom. It might be thought, that with this theory in view, the only indication necessary to follow, would be to sweat the patient, to cure him of the most of our diseases. This would hold true, if such remedies could be applied on the first complaint of indisposition, before any permanent disease could be produced on the internal organs, by the internally repelled blood, exciting inflammatory engorgements in the glands. For instance, when a person has been greatly relaxed by the *effects of heat and perspiration*, and has *this perspiration* suddenly checked by exposure to a moist atmosphere, a dry skin, with languor, pain and soreness in the muscles and bones, with a sense

of chilliness passing over the whole surface, or alternate with flushings and heat, take place, which is occasioned by a contest of nature to overcome the suppressed perspiration. The nervous system is also involved; pain is felt in the head and along the spine, particularly in the lumbar region. The internal organs ultimately reach their *maximum of congestion*—death must then ensue, or a partial reaction take place. (f.) The blood is again forced back towards the surface, but finds no escape—Heat is thrown on the surface, but no relief is afforded the *congested organs* by the *safety valves* of perspiration. The *liver* holds out signs of relief, by an increased secretion, evinced by a yellowness of the eyes and skin—the *stomach*, by *pain* and *nausea*—the *kidnies*, by pain, *high coloured* and *scanty urine*. In short, “*the heart is sick and the whole head is faint.*” In robust persons, nature is frequently competent to re-establish an equilibrium, especially if assisted by some diaphoretic medicine. But in most cases, the internal organs are too permanently diseased, to be relieved by perspiration alone. *Hepatitis, Gastritis, Enteritis*, and *inflammations* of other *organs* continue, after nature, or art, has restored perspiration. We have to use calomel (not, however, to salivate) to restore healthy action to the glands, and blood-letting, blistering, &c. to assist in curing *Gastritis*, and other *inflammations*. Here lies the great error of Doct. Daniell’s practice: he stimulates and sweats, where the internal organs are too permanently inflamed, to be relieved with mustard plasters and red pepper tea. His practice in some cases is good, if used where no inflammatory congestion of the organs exists. But where inflammation of the organs, from frequent or long continued congestion, has taken place, I should consider his practice not only improper, but calculated to aggravate the disease. He, however, deserves much credit for his labors; he has brought external remedies into greater notice, and supported his theory and

practice with much ability and ingenuity. With great and practical discrimination, cases may occur in which it may be found useful; yet, if indiscriminately employed, it will do more harm than good. We will always be compelled, if we practice according to the dictates of common sense and reason, to *prescribe agreeably to the state of the system*. If we are convinced that the internal organs labor under fixed congestion, or inflammation, we shall be compelled to lay aside Dr. Daniell's *high pressure* treatment, or the boilers may burst or give way.*

We will now proceed to a further discussion of the proposition first stated, viz: "*That moisture, under different states of temperature, operating on the human frame under different states of the cutaneous apparatus and muscular relaxation, are the only causes of Intermittent or Remittent Bilious Fevers.*" In reviewing the situation of all countries, we find that intermittents, and what are termed malaria fevers, are most prevalent in moist tracts of country, and that without any reference to putrefaction, or collections of stagnant water. They are found, wherever much fresh water is seen in a warm climate, or where warm seasons of weather prevail. Intermittents and other fevers, are prevalent on the shores of the lakes in Canada, and on other lakes of fresh water in other parts of the world, where we cannot suppose a sufficient quantity of vegetable putrefaction can take place, to contaminate the air around these lakes to produce these fevers. Districts of country farther south, containing greater quantities of vegetable putrefaction in them, though without the aid of much moisture, are more healthy than these shores. It may be asked why, if moisture be so fruitful a cause of sickness, are not seamen and others, exposed to the ocean's atmosphere, more frequently affected with disease? It is a fact, that has long been known, that the salt in the sea water, not

*Viz: The Glands.

only preserves it, but renders the moisture combined with the air, less deleterious to the human frame. It is known, likewise, that sea breezes and bathing are healthy, and those who reside on *salt marshes* and *ponds*, are always less liable to fever, than those who live on *fresh water marshes* and *ponds*. (g.) Sullivan's Island, near Charleston, is very healthy, because surrounded with sea water; while inland situations, on the marshes, or collections of *fresh water*, are uncommonly sickly. (h.) *Collections of water in warm climates, or at warm seasons, are unhealthy in proportion to the evaporation from their surfaces.* Thus from mill ponds, lakes, lagoons, &c. in consequence of the water being comparatively still in them, a prodigious evaporation takes place in hot weather, and is spread through a rarified atmosphere, over a large extent of country, and being condensed during the night, is precipitated in dew, or condensed in the form of fog, rendering the air damp, chilly and unhealthy. Persons exposed to such air at night, uncovered perhaps, when the system is excited, or has been perspiring during the day, are liable to suppressed perspiration, especially if the individual fall asleep, when the excitement too suddenly subsides, and he awakes with an unpleasant chilliness, and feverish symptoms. It is considered very dangerous for persons to fall asleep travelling in the stages, through the large fresh water swamps, between Augusta and Charleston, as an attack of fever, of some kind, is the almost certain consequence. We know persons exposed at night, are always more subject to fever in our climate, than those who are not. We also know, that we have more fever in our climate, in September and October, than in any two months of the whole year. Now, it would appear to us, that if our diseases arose from a poisonous air, engendered by vegetable putrefaction, that as this is more *active*, and *extensive* in the *warmer months* of the *summer*, we should then experience the most disease; but not so. (i.) In the fall months.

when the disparity between the temperature of the days and nights becomes very great, and dews and fogs more considerable, in consequence of the *increased coolness* of the *nights*, and nearly summer heats of the days; evaporation going on as rapidly in the day, while condensation at night is much greater, then it is *febrile diseases* commit the greatest ravages among us. (j) I would, in reference to the foregoing, ask the *miasmatist* a few questions. If miasma be the uniform, general, or remote cause of fevers, why is it not as *virulent* and *active* in the day, as at night? (k) Why are persons, in the cooler month of October, exposed in saving fodder, or in any other night employment, remote too from all collections of water, or vegetable putrification, so very liable to intermittent fevers, (l) which I have often witnessed in my practice? Again—Why are persons engaged over, or around fire, or smoke, such as, blacksmiths, bakers, cooks, &c. less liable to intermittents, if it is not owing to the air being rendered drier by the operation or presence of fire? (m) In other words, if malaria be the cause, how does *fire*, and other protectives against moisture, prevent its engendering fever? How do you account for the occurrence of intermittents in broken tracts of country, where you can discover no traces, local or general, of a source from which you can suppose malaria to emanate? (n) You may also ask, how I account for them in such places where moisture is likewise absent, supposing it to be the cause? I answer, that the air is in no place, perhaps, on the globe, destitute of moisture, even where it never rains, nor at the driest seasons. Deliquescent salts will always detect moisture in the air every day in the year. When we, therefore, speak of a *dry atmosphere*, we mean, it is *only relatively so* (o) We know, in those countries where it never rains, vegetation is nourished by *copious dews and fogs*, which readily accounts for sickness in such places when it occurs. We are pretty certain, that those countries which possess. *relatively*, the driest

atmosphere, are *relatively* the healthiest. (p) If we suppose that a person even in the driest season, is much excited by exercise, if he suddenly cools when he is partially stripped, without adding his outer dress, *ten chances to one* if he is not made sick; if not with a bad cold, with an intermittert or some other kind of fever, originating from checked perspiration. It may be asked, if *moisture, under different states of temperature, acting on the human system under different states of excitement*, produces disease, why does not sickness occur in the *ratio of moisture* present, which being greater in the spring, the sickness should then be greatest? I answer, that my proposition carries with it a full explanation. Moisture only produces disease, I alledge, in connexion with *temperature*, either *cold or hot, acting on the human frame under different states of excitement*. Now, to suppose the *moisture and temperature* of the *air* always to be the same without *variation*, and the *human system* always in an *equable and uniform state of excitement* without *change*, and it is impossible for all the miasmatists in the world to tell how disease could occur under such circumstances; because the cutaneous and all the other functions would always necessarily remain in a healthy condition. We know that our ordinary winters have the effect of bracing the system; it is, therefore, not to be expected, that moisture in the cool months of spring is to produce as much disease as what it would if experienced after the system had been debilitated and relaxed by the warmer months of summer.

I will here state one fact, which goes to destroy the doctrine of miasma, or malaria, more conclusively than any other, perhaps, of the many hundreds which could be adduced; and it is one which I conceive the most *ingenious miasmatist* will fail to get over, or explain. We know that all authors tell us, that the primary step in the cure of all diseases, is to remove the cause. Now, if a patient is sick from malaria, and that in a malaria district of country,

how, *in the name of common sense*, is the *cause* to be removed; or if the patient's cure depends upon it, how is he to *be cured*. (q) If the *cause* (malaria) is continually present, and incessantly operating, of what avail are all remedies? If you *bleed, puke, or purge* him, it is (according to theories on the subject) still *smelt, breathed, or swallowed with the saliva into the stomach*, for the patient *still* performs those functions. From its constantly surrounding and enveloping the patient, we must suppose that an obnoxious application of it is perpetually taking place, without our having the power to remove it *as a cause*, or obviate its *effects*, not only upon the patient, but upon all who attend him. We know, however, that by re-establishing perspiration, with an equilibrium of the system generally, the patient often recovers, which, we suppose, could not happen, if malaria was a primary *cause, constantly present and operative*.

It has been supposed by some, that stagnant water was a peculiar source of malaria, because, on agitation, it is known to emit certain non-respirable gases, especially hydrogen. To this I would reply, that such collections of water emit this *gas* freely, (r) in the winter and spring, as well as at other times, when all agree, that malaria is either absent or dormant.

I will, for the present, recur to my proposition last stated: "*That collections of water in warm climates, are unhealthy, in proportion to the evaporation from their surfaces.*" The difference between the evaporation from still and running water, is very great.—If water be permitted to stand exposed to the sun in an open vessel, the evaporation goes on more rapidly than if the same quantity of water was kept agitated for the same length of time. (s) Thus water courses, whose currents are rapid and agitated, never give rise to sickness like those which are stagnant and deep; because the evaporation in the first instance, is inconsiderable, while in the latter, it is very great, especially in hot weather. Thus the healthi-

ness of a stream may be determined, in a great degree, by the rapidity of its current. It may be asked, why it is, that malaria fevers are very prevalent on the *Champagna di Roma*, when it is an extended plain, and but little water visible on its surface? (t) I will reply, by stating, that evaporation goes on very rapidly from the surface of ground which is continually moist. This is the case with the plain in question; it is surrounded on all but one side, with very high mountains, many of whose tops are covered with snow the greater part of the year. The natural tendency of the superabundant moisture deposited about these mountains would be to settle in this plain, which may, at some period of creation, have formed the bed of a lake. The earth, therefore, must always possess great moisture, and a great deal of humid vapour necessarily exhale from its surface, and at night, or in cool seasons, condense and be precipitated again. The same may be remarked with regard to the *Pontine Marshes* south of *Rome*. In neither of the above mentioned places does vegetable putrefaction take place, or exist, in sufficient abundance to give rise to the diseases prevalent on them. It will be recollected, that the *Malarious* make three things necessary for its production, viz: *Heat, moisture, and vegetable putrefaction*. Now, if we can prove that *malaria fevers* can be produced without the presence of either one of these agents, their theory falls to the ground. If they say such disease can be produced with *heat* and *moisture*, or by *vegetable putrefaction alone*, we have only to name those two celebrated malaria districts of Italy, and the fenny counties of England, with other places, to show that vegetable putrefaction is not a necessary agent in the production of these fevers. Professor Carter, of New York, an accomplished scholar and interesting tourist, informs us that the *Campagna di Roma*, has very little vegetation growing on it, except the common Broom. (u.) which is short, and not very liable to putrefaction, being a woody, perennial plant, or shrub.

The vegetation on the Pontine Marshes, is also short and scanty : In neither of those places can we suppose vegetable decay to be an agent, or the origin of disease. If it is said that *heat* and *moisture* are alone competent to create the disease, the ground is abandoned and my theory admitted in part, at least as respects agents ; *temperature* and *moisture* being important words in my doctrine. An eminent scientific man admitted to me that he had a regular attack of Tertian fever after being caught in the rain, when his system was excited ; and would have, at another time, experienced another attack, had he not went to bed, applied warm rocks to his feet, and drank some warm beverage. Now, there is no truer principle in philosophy, than if *certain causes*, under *certain circumstances*, produce *certain effects*, the *same causes*, under *similar circumstances*, will always be *adequate to produce the same effects*, unless counteracted by some countervailing agent. Why, is it unreasonable to suppose that *moisture*, in *various conditions of temperature*, applied to the system in *various conditions of excitement*, is capable of producing the diseases heretofore attributed to malaria, by checking perspiration ?

Swamp lands, in this country, are unhealthy, because evaporation goes on from their surfaces. Mud, recently exposed, whether in a lake or river, emits more vapour than water, because, being most commonly of a dark colour, it absorbs heat, which increases evaporation ; while water reflects a good deal of heat, and of course, as far as heat is concerned, evaporates less. Our swamps in this country, in a state of nature, are inoffensive, although considerable vegetable putrefaction takes place in them ; yet when the timber is removed from them, and their surfaces exposed to the sun, so that evaporation goes on more rapidly, then it is they become unhealthy, and uninhabitable. (v.) If, however, they are drained of their moisture and cultivated, they become healthy again. Since the adoption of the dry culture system

in the neighborhood of Savannah, that town has been much healthier (*w*)

Winds which blow from particular directions, in consequence of being surcharged with moisture, are, in the interior of our country, unhealthy. Moisture is capable of being floated to a very considerable distance in the air, equally as far as the *Malarious* have concluded *miasma* could be wafted. I have never witnessed a north-east, or east wind, to prevail long at a time in our climate, without augmenting disease; and in my practice, during the summer and fall months, I can, from the prevalence of this wind, generally foretel an accession of disease. This wind is our *Monsoon*; it is moist and cool, always sinking the thermometer several degrees. It is the cause of intermittent and *malaria fevers*, in locations and situations, where the stoutest believers in *malaria* cannot trace them to any such source, occurring frequently on healthy elevations, remote from all possible infections, swamps, or ponds. (*x*.) Our westwardly winds are always healthy, because they are dry. We know, during very dry years, or summers, our country experiences more health.—The same occurs during constant wet years. (*y*) If the year be dry, the temperature of the air is uniform; and the same occurs if it be wet. In the latter case, a constant fall of rain, without intermissions of hot or dry weather, keeps the air at such a cool, uniform standard as to prevent the human frame from becoming so much relaxed, to be again exposed to chilly damps. The evaporation is also inconsiderable under such circumstances. North-east winds, on the sea coast, are healthy to the inhabitants on it, because it is charged with saline effluvia; but before it reaches the interior, it loses this quality and becomes fresh water vapour. Whether it is merely deposited by the air on the ground, or is absorbed by vegetation, is impossible to say; but we are convinced of the change.

Rivers, which overflow their banks, are always

unhealthy, as pools of standing water are left in many places, and a moist earth to be dried and evaporated by the sun, and which is again condensed in the form of *dew* or *fog*, over a much greater extent of country than is inundated. (z)

It is supposed by some, that the offensive smell created by vegetable decomposition, is an evidence of the presence of malaria : this, however, is untenable and unsupported by fact. Diseases have been frequently, no doubt, charged to such causes without grounds. We know, that whenever disease appears, the people are always solicitous about the *cause*, and physicians are generally anxious to satisfy them with some *solution*. A pile of *potatoes*, or a *heap of coffee*, or perhaps a few *putrifying apples*, or *turnips*, may be charged with the production of the most ravaging diseases. Such physicians fail to tell us how many piles or masses of vegetables have been known to rot without producing disease. Neither do they prove to us that such diseases would not have prevailed, had no such decayed vegetables been known at the time. Malignant fever may be generated in *damp, confined and hot lanes*, among persons of scanty provisions, and filthy lodgings, and once it has been excited, be propagated, by an infectious quality given to the atmosphere, by morbid human effluvia, when a few rotten vegetables in a hole or cellar have nothing to do with the matter. I would not, however, be supposed to be favorably disposed towards such accumulations, because decency would dictate their removal. Offensive odours are not necessarily unhealthy:—Musk, Assafœtida, and Sulphuretted Hydrogen, the odour of the Pole Cat, and various other things, emitting almost insupportable smells, are not considered as capable of producing fevers. Animal putrefactions are not considered unhealthy, except they arise from their vast accumulation in sepulchres, although they emit odours more offensive than decomposing vegetables. One reason why putrifying vegetables have so frequently been

charged with the production of disease, is, that it always occurs freely when *heat* and *moisture* are present—one to *relax* the *skin*, and the other to *check* *perspiration*: it is, therefore, censured instead of the real cause. (A)

I am firmly of the opinion, that if those persons who live on *ponds*, or *marshy situations*, were clothed in thin flannels next their skins, they would escape disease much better; and even in the section of country where I live, those who wear flannels thro' the year, are less obnoxious to the fevers of the climate, than those who do not. I have myself, experienced the benefits of flannel as a protective—I have, ever since 1822, wore flannel during the winter; but would take it off in the spring. In the summer of 1827, I had an attack of intermittent fever, terminating in remittent bilious fever: it was brought on by wearing very thin clothing and exposure to night air. In returning home, 10 or 12 miles, at night, after visiting a patient, a cool wind sprang up; I became chilly, and in two hours had a regular paroxysm of an ague. The following fall I put on flannel and improved in my health: The following May I took off my flannel, directly after which a moist spell of weather came on, and I had a regular attack of a very severe intermittent. I put on my flannel again, and had no more disease till August, when I put on thin clothing, and by exposure to a damp N. E. wind, had one slight paroxysm of intermittent. Now, in the last case, the attack would have been more severe, as intermittents were more prevalent in the country at that time, but for the protection afforded by the flannel against moisture. Flannel shirts, or shirts of a thin material, one half wool and the other cotton, with very thin outer clothing, I am confident, is the healthiest summer dress in any climate, and could be worn with comfort when the skin became a little accustomed to it. In long spells of damp weather, or during the damp cool nights of autumn, thin flannel sheets are more healthy than

any other kind. If these things were attended to, especially in weak constitutions, we should not meet with so many cases of pulmonary disease, rheumatism, dysentery, and other complaints arising from checked perspiration.

The cause why a country possesses more health while uncleared and uncultivated, than in an opposite condition, I think may be explained in some degree by one fact, viz :—We know the leaves of trees and shrubbery absorb a great deal of moisture. A plant may be sustained in a flower pot a long time, by simply sprinkling its leaves. If the ends of vines are immersed in water, the whole plant is invigorated and thrives. A string tied to a cucumber vine, having the other end immersed in a cup of water, is known to sustain the whole plant in dry weather without any other application of water. We know that collections of water which are surrounded with trees, are less deleterious to health, than if cleared to their shores, in consequence of the trees, or their leaves, absorbing the moisture that would otherwise be carried through the atmosphere. Green trees remaining in cleared grounds, injure vegetation under and around them, by attracting and absorbing the moisture, that would otherwise reach, nourish and sustain shorter vegetation. Hence we infer, the ground near such trees is not injured by their shading it, but by absorbing the moisture in its wonted descent. Thus we suppose a country in a state of wilderness to be healthy, as *dews* and *fogs* are absorbed by the trees before they reach the earth, and the evaporation during warm weather, is very small, in consequence of nothing, comparatively, remaining in contact with the rays of the sun to be evaporated. But it is quite different in an old, or cultivated country : The dew, or fog which is here precipitated, descends to the ground without interruption—The vegetation also being inadequate to absorb it, it remains to be re-evaporated by the following morning's sun. The night air in an old

settled country is always found more damp and unhealthy than in a forest. Indians always become unhealthy on their cleared lands. A huntsman may sleep out at night with perfect impunity, in an uncleared country, when it would be hazardous, if not death, to do it in a cleared, or old country, in our climate. (B)

I know the *Malarious* may ask many *apparently* imposing questions, and seek out *some few exceptions* to the general tenor or rules of my doctrine. I would advise such to recollect the old adage, that "*there are no general rules without exceptions*;" and merely putting one head to work to find out *isolated facts*, or *singular cases*, to rebut *general rules*, is an unfair method of meeting honorable argument. I know, a great many instances of collections of water in *duck ponds*, *mill ponds*, *rain ponds*, with a host of other *ponds*, *waters* and *rotten vegetables*, may be adduced as giving rise to sickness. I must beg of the *Malarious* to recollect, that whenever they speak of *ponds*, *rivers*, *lakes*, *fogs*, *dews*, *vegetable putrifaction*, (which requires moisture for its process,) that they are speaking of things, which I admit, produce sickness, more or less, by the influence of moisture, evaporated from, or connected with these various modifications of *humidity*.

Whatever credit, or discredit, the foregoing *merits*, it is all my own. I am conscious that the existence of *malaria* has been denied before; but I never knew it till since I proposed and mentioned the foregoing theory to some friends.* I never read any paper, in which it is denied until a day or two back, when I saw a *paper* on the subject, by a Doct. Collins, of Louisiana. After this essay had been read to the Society, in Milledgeville, (c) I searched, (in what few authors I had in possession,) in vain, for something to aid me in the investigation. I had, therefore, no

* The first time I made this theory known, was last spring, when I mentioned it in conversation to a friend, &c.

other helps or resources to draw from, but my own observations and reflections. I am sensible of this imperfection. But the more I have reflected and investigated this important subject, the greater has been the multiplication of facts, in support of my doctrine. The short limits of this essay will not allow me to go farther into reasonings on it at present, or to anticipate the attacks on what may be conceived its vulnerable points. I also am convinced that I have not only to contend with long established errors (D) on this subject, but against an almost *impregnable rampart—the prejudice of pre-conceived opinions*. I am consoled, however, with the reflection, that I am not the first who have approached *error*, however highly protected under learned authorities, or scholastic dogmas, or *intolerant prejudice*. *If I were*, the enslaving errors of Galen—the mechanical philosophy and humoral pathology of Boerhaave and Sylvius, which so long sat, *incubus-like*, upon the genius of our profession, and spell-bound it in the icy *embraces of superstition and prejudice*, had still been believed, and I left the *victim of tyrannizing error*.

Reflecting on the foregoing as the only rational causes of intermittent fevers, I have been led, by steps, to believe that the periodical nature of these fevers could be accounted for, on the principle of *collapse* of the skin and *reaction*, or in other words, that the pyrexia and apyrexia of intermittents, are nothing more than *reaction* and *collapse*. For instance, when an ague is first experienced, the skin turns pale—the finger nails and lips purple—the extremities suffer with cold, and a shivering seizes the whole frame. This preternatural coldness continues longer or shorter, according to the vigour of the constitution and the facility of the organs to react. When reaction is accomplished, the hot stage is formed, which creates an engorgement, or congestion, if I may use the term, of the *cutaneous exhalents*, in turn, which can only be relieved by spontaneous perspiration,

which is very profuse. When this congestion of the superficies is relieved by perspiration, the necessity of its continuation ceases, or its propelling cause discontinues. The skin, however, from being taxed with this great *over-action*, falls into a state of *collapse*, and ceases to perspire as effectually, as if the perspiration was checked by moisture. The system, in this state, is left to regain its energies. The blood, however, fails to find its healthy passage by the skin—a propulsion inwardly again recurs—*reaction ensues*—is sweated off, and a *collapse follows*: thus exhibiting the regular paroxysms of an intermittent fever, with all its attendant phenomena. In fact, all fevers which arise from checked perspiration, particularly remittent fevers, exhibit the same routine of *reaction* and *collapse*. I never have seen what might be called a perfect *continued fever*—all of them have remissions and exacerbations. The only difference between the latter fevers and intermittents, is, that in the latter, or intermittents, the intermissions, or remissions, are more complete; or in other words, the *collapse* and *reaction* exist longer and are more distinct. I consider them all fevers of the same family; but they occur generally under three heads, viz:—Remittent, Intermittent, and an intermediate grade, called *chills and fevers*, where chilliness is scarcely perceptible, and, apparently, *heat and fever* existing at the time the chilliness is said to be felt.

In our practice this year, we have met with a form of fever, which we think might, with great propriety, be denominated *congestive fever*, or *congestive typhus*. It prevailed almost entirely with the blacks.—It is marked by the following symptoms: Dry hot skin; red tongue, though sometimes white or foul; at the beginning, sometimes a chill is felt; pain not very acute any where, but commonly complained of in the abdomen, head and back, accompanied sometimes with nausea and vomiting; the pulse never very strong or full, but commonly small and quick; the urine scanty and red; the *faeces* dark, fetid, or natural

in their color; the mind frequently wandering.—What is most remarkable in this disease, is the *uniform heat and dryness of the skin*—exacerbations not confined to any particular part of the day, but generally occurring every other day.—It is very tedious and unyielding in its progress, continuing sometimes for weeks, without much alteration except increased debility. The causes which produce remittent and intermittent fevers, also give rise in a more aggravated form to this *congestive fever*; for it evidently takes place from *checked perspiration*. For its treatment, I must refer the reader to the *Transylvania Journal of Medicine*, as my co-partner, Doct. Hubbard, has forwarded to that periodical a detailed account of this fever, &c. I should have mentioned, that the difference in time, as to recurrence of the paroxysms in intermittents, in different individuals, at different seasons, is owing to the differences in constitutions, and even in the same constitution at different seasons; or in other words, the difference in the powers of *reaction*, in those various cases

I do not know that the foregoing theory can give rise to any very important indication of cure. One thing, however, I would remark, that from trials made, and from some facts ascertained, I am of the opinion that *strong sudorific* medicines, may be used in many cases of fever, in combination with, or simultaneous exhibition of cathartics. I have cured some cases of intermittents by the administration of castor oil, and *red pepper tea alone*; but it was in young subjects, and before local and internal congestions had formed. I knew a family who were in the habit of giving salts to their negroes, combined with *red pepper tea*, and generally with success in intermittents. The adoption, however, of such a practice would require discrimination, particularly in the selection of cases.

The object to be accomplished by offering this theory to the public, is to excite them to the use of what

I conceive important means of guarding themselves against our summer and autumnal diseases:—1st. By guarding against the presence and influence of moisture as far as possible, by suitable dress—by draining ponds, marshes, lagoons, and all collections of water where practicable—let the air of a country become comparatively dry, by such means, where it has been damp, and an improvement of health is almost sure to follow. The piney woods, with sandy soils, are always found healthiest in our climate, because the atmosphere in such places is driest, the sand and vegetation readily absorbing the moisture. (E) The 2d object is to excite the attention of the profession, to the state of an important function, (the skin,) and to use more freely and frequently, those remedies which are calculated to restore it to a healthy state, such as the various sudorifics in use—'The red pepper, or capsicum, we believe, will, when its properties and effects come to be better known, and its past merits established, prove an important article of the *Materia Medica*.

APPENDIX.

(a) "What do we know of Electricity, Galvanism, Magnetism, &c. but from their effects; and yet who doubts their existence? We know the effects of malaria."—Hays.

I answer, that we know a great deal more of the nature and qualities of those things, than is pretended to be known of malaria. We know the Electric fluid and Galvanism, have heat and light combined with them. We know they affect the nervous system when applied to our frames. We can always detect their presence by proper instruments. Who has ever explained so much with regard to miasma? I ask again what is it?—What particular organization of the human body does it first operate on? We know there are many things only understood by *their effects*; but they are very unlike what malaria is supposed to be—they have certain fixed laws, by which their effects are always regulated. With these laws, we can make ourselves very familiar, as they never vary; such are *Magnetism, Galvanism, Chemical affinities, &c.* Not so with the *supposed something, or no'ing, miasma*; it has no laws or regular modes of producing uniform effects. It is made the cause by some of *one, or more diseases*—by others, of as many hundreds, without *any informing us* of the laws by which it acts, much less of the qualities of the substance itself.

(b) "It is no evidence of the non-existence of malaria, that it cannot be detected by the *eudiometer*, any more than that electricity cannot be detected by the thermometer, is an evidence of the non-existence of electricity."—H.

A strong conclusion this. Now, Dr. M'Culloch, the great advocate of malaria, says miasma consists of certain gases, or a "compound of *Nitrogen, Oxygen, Hygrometric vapour*, and a *basis of a deleterious character*." Assuming this untenable statement to be the fact, which seems to be conceded by most miasmatisists, I would ask Dr. Hays, if the *eudiometer* would not be more likely to detect their presence in an undue proportion in the atmosphere, than for a *thermometer* to detect the presence of electricity? There can be no analogy between the two. If he had said, the failure of the *eudiometer* to detect certain *gases* in the air, which miasmatisists denominate malaria, was no more proof of their non-existence, than the failure of an *electrometer* to detect *electricity* in the air, was proof of its non-existence, there would have been some reason in his analogy. The miasmatisists are unfortunate in supposing malaria to consist in the poisonous *gases* above named, when their total incapacity to produce *fevers* of any grade, is known to every chemist who has worked in these gases, and that, free of any inconvenience, in Laboratories, where we must believe these aerial substances are more concentrated, than they ever are in a state of nature—otherwise the *eudiometer* would be competent to their detection. The probability of their diffusion and rapid dispersion in the air, where they may be supposed to be formed, is strong testimony against the offensive existence of any undetected aeriform poison, called mala-

r.a. Malaria, says the Editor of the Southern Review, "is believed by Orfila and Volta, to consist of certain *gases*; but from the very nature of the case, we may consider the question decided in the negative, by the want of positive testimony. Our *eudiometers* are so delicate, that some regular result would have been obtained by the accurate experimenters who have engaged in the investigation, were this the path of discovery; but it is now, we believe, universally admitted, that the air of the most pestiferous marsh, or jungle is composed of precisely the same imponderable materials, mingled in precisely the same proportions, with that which is to be found in the most favorable and healthy positions." See page 174 Southern Review, article Malaria.

(c) "Moisture may be essential to malaria, as a dry air is to electricity."—H.

What proof has the miasmatist of this, beyond bare assertion? If it is, it is also essential to our doctrine.

(d) "I do not know how the mere corrugating the skin can render the muscles rigid."—H.

Neither have we asserted it.—The text explains itself.

(e) "Of course, where vapour is condensed, *caloric is given out*. During the *day* the evaporation cools the atmosphere; its condensation at night warms it." See Wells on Dew.—H.

This theory is contrary to the experience of every person who has lived in South-Carolina or Georgia. The temperature of our nights, is several degrees cooler than our days; in our summer months, from 12 to 3 o'clock, P. M. includes the hottest part of our days; it is at this time evaporation goes on most rapidly. According to the above doctrine, 3 o'clock in the afternoon, on a summer's day, should be the coolest part of the 24 hours, and our nights, from 12 o'clock to day-break, should be the hottest, when condensation is greatest. It is a notorious fact, that on our summer nights, when we have scarcely any condensation or fall of dew, our night air is always warmest. If any heat is given out, under such a condition, it is only latent.

(f) "No doubt exists that fever may be produced by suppressed perspiration; but it is not proven (*neither have we assumed it*) to be the only cause of fever. If each disease could be produced by a single cause only, we should stand a considerable chance of dying of old age."—H.

Grant it.—We have not contended for any such vagary. Moist vicissitudes, acting on the human frame in various states of excitement, we have made the *causes* (*not cause*) of those diseases which the most sensible miasmatists ascribe falsely to malaria; such as intermittent and remittent fevers. We have not, like *McCulloch with malaria*, made a *Pandora's box* of our theory, and made diseases issue from it, that might as soon be expected to drop from the moon or stars, as to start up out of a swamp, a stagnant pool, or gutter. We know, the diseases, which we state are produced by the above causes, are often brought about by intemperance, improprieties in diet, with other internal exciting causes, &c.

(g) "Less liable, but not exempt. Putrefaction takes place, less

readily in salt than fresh water : evaporation goes on equally from both."—*H.*

The experience of the inhabitants of the low settlements, or sea coast of Georgia and Carolina, is widely different from this statement. Many of them quit their residences and remove to the sea coast, or to the islands surrounded by salt water, where they enjoy *comparative*, if not *entire* exemption from those diseases, said to be produced by malaria. We do not deny, nor does the admission of the fact prove any thing, that evaporation goes on equally from both kinds of water.

(*h*) "The miasmatist could not possibly have a more valuable fact."—*H.*

It is at their service.

(*i*) "It may require all the heat of the summer months to generate malaria, and in the fall to produce its ravages."

Of this, there is not the smallest proof.

(*j*) Malaria, it is said by some, exists only in union with moisture, or is dissolved in it."

No proof at all of this. If moisture be so important, it is a brace to our theory.

(*k*) "At night, when the moisture is condensed, the malaria may be more active."—*H.*

Mere supposition.—If any result happens, it is a cooler and more moist atmosphere, very likely to check perspiration.

(*l*) "They may be in a current of air from a malaria district.—We know it may be wafted miles."—*H.* [So may moisture.] Or they may be affected by a check of perspiration, as you have correctly stated." [*Well said.*] "Thus they are exposed to two causes"—*H.* [Admit it; but malaria is not one of them.]

(*m*) "Heat may destroy malaria."—*H.*

So said, but not proven. It may also destroy or dissipate moisture.

(*n*) "See McCulloch."—*H.* I know what he imagines or says; but he is wanting in proofs. "Malaria may be generated" [and felt also, I suppose] "in situations where you would not suspect it. It may be wafted by currents for miles."

The very same may confidently be asserted of moisture.

(*o*) "This certainly works both ways, and the miasmatist may take advantage of it, as well as his adversaries."—*H.*

He is welcome to it.

(*p*) "The Hollander, amidst his fogs, is a healthy, robust man; the Italian, in his (*comparatively*) dry sky, is puny."—*H.*

It is said, owing to the damp atmosphere of Holland, life is detracted one half; and even M'Culloch includes that country as one of his malaria districts—he likewise affirms, that a dram of any stimulating liquor has a tendency to prevent the action of malaria in Holland. When we take into consideration, the manner of living among the Germans—their stimulating diet of *onions, leeks, garlic*, with their excessive use of tobacco in smoking; all of which determine to the surface and prevent the action of moisture on their systems, which is likewise aided by their thick woollen dresses, universally worn, it is not surprising, under such circumstances, to

And them a healthy people, although *enveloped in damps and fogs*. Italy has, comparatively, a very damp atmosphere; particularly so when put in competition with many other parts of the world. This is not strange, when we view the situation of that country, surrounded on two sides by the sea, and checkered with many fine rivers, which flow through fertile vallies, interspersed with extensive tracts of swamp or marsh lands. It is not wonderful that the Italians, in such a damp country, *half clad and half starved*, should be a sickly puny race of beings. We might here ask the miasmatist, why it is, in a country like Holland, where Dr. McCulloch states malaria exists so freely, as frequently to be carried over to England on an east wind, it has so little effect on the "*healthy, robust Germans*," who are immersed in it—while in Italy, which Dr. Hays says possesses "*comparatively a dry sky*," the people should be so puny and sickly, seeing, as Dr. Hays and Dr. McCulloch assert, moisture is essential to the propagation of malaria?

(q) "No fact is better established than the difficulty, and frequently the impossibility of curing *fever* patients in a malaria district, during the malaria season. The moment they go into the night air a relapse takes place." [Because perspiration is again checked.] "In Italy, when the peasants who migrate from the mountains to the malaria districts, during harvest, as laborers, are attacked with fever, they are instantly sent home" *to a drier atmosphere*.—"Experience has proved that recovery is almost a miracle if they remain."—H.

Such *experience* differs very widely, from that held by Dr. Hays' countrymen, and particularly the Southern physicians of the United States, where miasmatists locate as much malaria, as in any other part of the Globe. We have no hesitation in saying (as we know the experience of every Southern physician will bear us out in it) that hundreds of cases of intermittents, produced as all miasmatists agree, by malaria, are cured every season, at the very spot where they are contracted. Hundreds are cured by a simple emetic, or purge, acting revulsively on the skin, or at most, with a few doses of quinine superadded. Many are cured with red pepper tea domestically prescribed. All stimulants act more or less upon the skin, as every *sudorific* is more or less stimulating in its properties. Of the other kind of fever, *bilious remittent*, it is cured more than nine times out of ten, and that in the very tract of country where it is generated. It is true, relapses are liable to occur among us in these diseases, but it is not from a re-application of malaria, (which ought never to cease acting, if it exist,) but from irregularities in diet, or exposure to a damp air, by which means the perspiration may again be suppressed after it had been restored. The cases which terminate fatally, or linger in an uncured state, are generally those that labor under visceral engorgements, or glandular derangements. They are not killed, nor kept sick by an excess, or the constant presence of malaria.

(r) "What evidence is there of this?"—H.

Take a stick, and go to a pond of standing water, in Georgia or South-Carolina, in December or January, and stir the bottom well,

and collect the bubbles which rise to the surface in a bell glass, and on experiment, you will find this gas to be hydrogen.

(s) "This is contrary to the best established principles of natural philosophy; and you may easily satisfy yourself of its incorrectness by experiment."—H.

And you of its correctness by the same mode. Place two pots of water on the fire, with the same quantity of water in each; keep one agitated and let the other remain at rest, and see which will lose its water first. What cools air more than agitation? The same may be said of all fluids. Heat greatly facilitates evaporation. If water is agitated, it is cooled, and the heat counteracted in the production of vapour.

(t) "This is a mistake; the Campagna has numerous lakes, around the margins of which is the rankest vegetation."—H.

Admit it.—The presence of moisture is what I claim for my theory. The fenny districts of England, however, have not, perhaps, such rank vegetation growing on them, especially if grazed on by cattle and sheep. These places Mr. McCulloch has set down in his fearful catalogue of malaria districts.

(u) "There is *no broom* to be found there, but an abundance of *Furze*.* Professor Carter is no authority. However entertaining as a tourist, and interesting as a man, his observations are as incorrect as his style is inflated and vicious."—H.

"It is certain," says a writer in the Southern Review, page 163, article Malaria, who by his statements seems to have travelled over the Campagna, and who, I should suppose from his high talents displayed in this article, ought to be good authority, and would, with Professor Carter, probably be readily quoted, if they said any thing in favor of malaria, "that many of the districts in Italy, notoriously subject to the malaria fevers, as they are there termed, do not offer the peculiarities of surface and soil which we have been considering as connected with the developement of this noxious effluvia," (alluding to vegetable putrifaction.) "With regard to the Campagna di Roma," continues he, "now a mere waste, deserted, except by the herdsman and his flock, it is a territory of volcanic formation, broken into gentle undulations, and quite dry, and elevated considerably above the sea. *On its surface there is little or no water, nor is the vegetation by any means abundant; yet this is the very throne of the pestilential destroyer, &c.*"

(v) "Because the heat has access, and heat and moisture, with vegetable remains, generate miasma."—H.

Heat and moisture are important to our theory; at least their vicissitudes or alternations. Vegetable remains have never been proven to emit any thing more than certain gases, of which Azot or Nitrogen is the principal. These gases, as we before observed, have never been found offensive, when diluted with atmospheric air, nor to cause fevers in any state of concentration.

(w) "The miasmatisists would adduce this in their favor."—H.

They are welcome to it.

* *Genista* includes both *furze* and *broom*, and Mr. Carter might have taken the species for the other.

(z) "Does not the N. E. wind pass over malaria districts?"—*H.*

It passes over very moist places, such, perhaps, as are termed, by miasmatists, malaria districts.

(y) "The miasmatists have always cited this as proof of the existence of malaria."—*H.*

This is very strange. We cannot for our lives see what proof this affords of the existence of malaria; *because very wet, or very dry years are salubrious: ergo, it is proof of the existence of malaria.* Admirable conclusion! If moisture be such an excellent vehicle for the union with, and conveyance of, malaria, we should strongly suspect its presence during very wet summers.

(z) "This again, the miasmatists quote as favorable."—*H.*

They are at liberty to do so; it applies more in favor of our doctrine than theirs.

(A) "That it is something more than *heat and moisture*, which produces fever, is proved by the fact mentioned by *Dr. Currie*, in his *medical reports*—that it is a common practice among experienced seamen, on the coast of Guinea and other warm climates, when exposed during the night to a breeze from the marshes, to wrap their heads in a sea cloak, or other covering, and sleep fearlessly on deck with the rest of the body uncovered."—*H.*

We have *only* stated that these diseases prevail *most frequently*, when *heat and moisture* are present in a *great degree*, and *alternating*; not that they are alone competent to produce diseases under all circumstances, independent of the peculiar state of the excited, or relaxed condition of the system. We know very well, that anointing the body or skin over with oil is said, not only to be a protective against the plague, but against malaria fevers, although the face, saliva, lungs, &c. are left exposed. We also know oil repels moisture, and is a very great protective against its effects. In the case above mentioned, the *sea cloak*, wrapped over the head and probably the shoulders, might have afforded protection against moisture. The writer before quoted on malaria, or the reviewer of *Doct. McCulloch's* work in the *S. Review*, page 180, combating the idea advanced by *McCulloch*, that animals are liable to malaria diseases, makes the following remarks in conclusion:—"If our author should press us with the apocryphal statement concerning the protection afforded by breathing through a *silk handkerchief*, or a *folded mantle*; or the advocates of the *gastric pathology* urge upon us the proverbial advantage of *stimulating the stomach* with ardent spirits, or smoking; we reply that there is equally weighty evidence to establish the *preventive influence of oil applied over the whole cutaneous surface, while the lungs and stomach are left unprotected.*"—The exemption of animals from the influence of malaria diseases, our writer ascribes to the structure of their skins being so very different from man's, and so well protected by nature with coverings.—"Which," says he, "would, therefore, seem to be the organ principally acted on by malaria." [By moisture more properly.]

"Again," says *Dr. Hays*, in further confirmation of what he has advanced, "When the United States vessels were anchored at the N. W. part of the Island of Key West, in 1817, the trade, or S. E.

winds prevailed, and the men were very sickly with fevers. The ships were ordered to the S. E. side of the Island, and the crews soon became healthy. When, however, the wind changed to the N. W. the men were again attacked with fever, and they were then removed to their former anchoring place, when the fever ceased."—H.

It will be recollected that we have never charged salt water vapour with deleterious properties. The *saline nature* of it, we have affirmed, not only rendered it inoffensive, but healthy, and rarely, if ever, suddenly checked perspiration. But not so with land or fresh water vapour. This difference, I think, may be explained on the ground, that salt, applied in solution, or in vapour, if you please, or in substance, to the surface, is a very *powerful stimulant* of the skin; and so far from lessening the action of the skin, actually increases it. Fresh water, or vapour, we may suppose have precisely the opposite effects, unless healthy reaction immediately follows their application. Now the Island of Key West is not only within reach of humidity from the land, but I am told it actually has a number of ponds, or small lakes, marshes, &c. on its surface: it is not wonderful, therefore, that humidity (united with the condition of the crews, suffering from tropical heat) wafted to our ships, should produce such sickness. In confirmation of our doctrine, we think it is stated by *Sir John Pringle*, on the diseases of the army, that when the soldiers were stationed on some low ground, in one of the West-India Islands, a Dysentery broke out among them; he found its malignancy always in proportion to the *nearness of the water to the surface of the ground*, which he ascertained by thrusting down a stick or pole. The elevation at which malaria fevers are said to exist, is determined by the height at which moisture can in any considerable quantity be supported by the atmosphere.

(B) "This might be given in favor of malaria."—H.

It is at your service.

(c) "See Dr. Bell's paper in the Philadelphia Journal of the Medical and Physical Sciences."—H.

We have read Dr. Bell's valuable paper on malaria—We understood him as merely bringing forward facts, for and against the doctrine, and leaving his readers to judge for themselves, without himself giving an *unequivocal denial to their existence*. The doctrine we have attempted to set up as more rational than malaria, is exclusively the result of our own reflections, be it fallacious or otherwise.

(D) "It is only within a few years that the existence of malaria has been suspected." "See Lancisi."—H.

Not within so very few as you might suppose. *John Marca Lancisi*, was born at Rome, October 26th, 1654—In 1672, he was created Doctor of Philosophy and Physic—In 1675, he obtained the place of Physician to the Holy Ghost Hospital—In 1684, he was appointed Professor of Anatomy in the College of Sapientia—In 1668, Pope Innocent XI. chose him for his Physician, and Chamberlain—He was also first Physician to Clement XI.—He died January 21, 1720—His works were published at Geneva in

1718, in 2 vols. 4to. The first volume contained the following pieces :—" *De subitaneis mortibus ; Dissertatio de nativis deque adventitiis Romani celi qualitatibus ; De noxiis Paludum effluviis.*" The second contains the following, with other pieces :—" *Dissertatio historica de Bovilla Peste, ex Campaniæ finibus, an. 1713.*" "*Salio importata, &c. 1715.*" &c. It appears by this sketch, that malaria has been advocated for more than one hundred years. Independent, on these data, a peculiar constitution of the atmosphere, capable of producing disease, has been believed in from Hippocrates down.

(E) "The miasmatist could not give better advice."—H.

Agreed.

To conclude, we also agree in many other points, especially as follows :—

1st. "Malaria," says McCulloch, page 276, "is decomposed by heat." So is moisture dispersed, or dissipated.

2d. "It attaches itself to solid bodies, 267." So does moisture.

3d. "Fire and smoke decompose it, 281, 285, 293." So is moisture destroyed by them.

4th. "It is not propagated in crowded places, 292." Because in such places *smoke* and *fire* are abundant.

5th. "It is capable of being wafted in a stream of air, 259, 309, 311." So is moisture.

6th. "It acts most strongly in its own neighborhood, 217." So does moisture

7th. "Hilly countries are less liable to miasma, than plains." So they are to moisture.

8th. "Miasma is most prevalent in the evening and morning, and less so at noon-day, 274." So is moisture.

9th. "Miasma attends damp air, 270, 272." So does disease.

10th. "Fire and smoke a preventive, 281, 285, 292." So they are against moisture.

11th. "Miasma is destroyed in a dry atmosphere." So is moisture.

12th. "Ardent spirits a preventive of miasmatic fever, 280, 281." Because they promote perspiration, and protect us against the effects of moisture.

13th. "Decomposed by the Sun, 276." So is moisture destroyed by it.

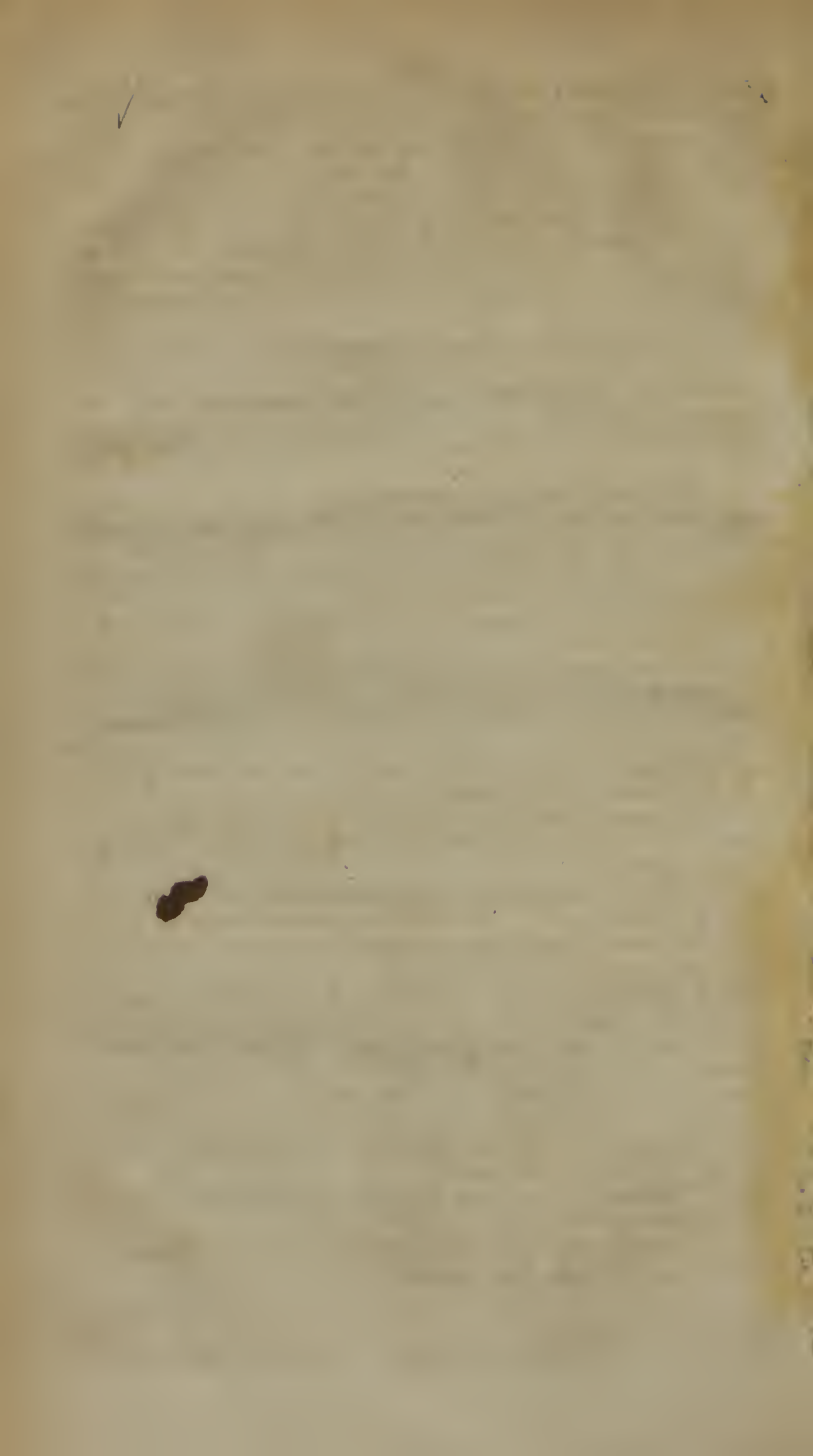
14th. "A gauze veil a preventive, 299." So it may be against moisture.

15th. "It (malaria) creeps along the ground, 265." So does moisture.

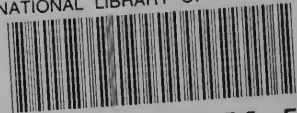
16th. "Malaria attacks, in preference, new comers, 447." Because less accustomed to a damp air.

17th. "Continuous heat alone does not produce malaria, 472." Neither does it moisture.

18th. "Malaria exists at all times of the year, and in all countries of the world, 470." So does moisture.



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